SEARCH REPORT

SN:940409 DATE 18-Mar-88 ID:KEG
FILE 02 CLASS 364 , SUBCLASS 200

SEARCH LEVEL	SEARCH EQUATION	NUMBER OF HITS
000	*** Total File ***	5193
001	S 250 BUSINESS	291
002	S 270 . RESERVATIONS	17
003	S 272 . STOCK MARKE	11
004	S 1 OR 2	293
005	S 3 OR 4	295
006	S 371 PEN/POINTER	36
007	S 5 AND 6	11
008	D 7 11 wwd/ 11 tot	11

END

SEARCH REPORT

SN:940409 DATE 18-Mar-88 ID:KEG
FILE 01 CLASS 364 , SUBCLASS 900

SEARCH LEVEL	SEARCH EQUATION	NUMBER OF HITS
000	*** Total File ***	4318
001	S 180 BUSINESS	466
002	S 183 . CREDIT	45
003	S 185 . POINT OF SALES	107
004	S 186 . RESERVATIONS	20
005	S 187 . SECURITY	71
006	S 188 . STOCK MARKE	30
007	S 1 OR 2	466
008	S 3 OR 4	126
009	S 5 OR 6	98
010	S 7 OR 8	466
011	S 9 OR 10	469
012	S 271 DIGITIZER/COORDINATE INPUT	48
013	S 276 DISPLAY WITH PEN/POINTER	79
014	S 12 AND 13	14
015	S 11 AND 14	0
016	D 14 14 wwd/ 14 tot	0

END

APS SEARCH REPORT

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(FILE USPAT)

SET PAGELENGTH 19
SET LINELENGTH 78
L1 1080 S ENTER? (2A) FORM#
L2 718 S (ENTRY OR ENTRIES) (2A) FORM#
L3 1730 S L1 OR L2
L4 14724 S KEYBOARD#
L5 669 S KEYPAD#
L6 14995 S L4 OR L5
L7 268 S L6 AND L3
L8 28063 S TABLET# OR DIGITIZER#
L9 21 S L7 AND L8

=> d 1-21 cit, ab

1. 4,730,212, Mar. 8, 1988, Realtime digital diagnostic image processing system; David R. Wojcik, et al., 358*83, 93, 111, 140; 378*99

US PAT NO: 4,730,212 L9: 1 of 21

ABSTRACT:
A fluoroscopic image is processed digitally using a television camera

US PAT NO: 4,730,212 L9: 1 of 21
operating at a frame rate of at least 30 frames per second viewing the image and providing an analog video output, a digitizer which digitizes the analog video output to provide digital information representative of the analog signal, a plurality of frame processors which carry out arithmetic and logical operations on the digital image information and are operable at the frame rate of the television camera coupled to the output of the digitizer, a 2-D filter operable at the frame rate of the television camera coupled to said frame processors, a converter and interface to convert digital image information processed in the frame processors and 2-D filter back into an analog signal and television display coupled to the output of the converter for displaying the processed signal.

2. 4,698,758, Oct. 6, 1987, Method of selecting and reproducing language characters; Theodore E. Larsen, 364*419; 400*110

US PAT NO: 4,698,758 L9: 2 of 21

ABSTRACT:
A method of selecting and reproducing language characters, preferably in languages having a multitude of pictorial characters, from phonetic or sound representation of the language, includes the steps of displaying the phonetic symbols which show all of the sounds of the language without intonations, selecting the desired sound for constructing a character, displaying all language characters having all intonations of the selected sound, and selecting the particular character having the unique phonetic sound and intonation combination, and the specific meaning intended.

3. 4,680,628, Jul. 14, 1987, Realtime digital diagnostic image processing system; David R. Wojcik, et al., 358*111; 378*99

US PAT NO: 4,680,628 L9: 3 of 21

US PAT NO: 4,680,628 L9: 3 of 21

ABSTRACT:
A fluoroscopic image is processed digitally using a television camera operating at a frame rate of at least 30 frames per second viewing the image and providing an analog video output, a digitizer which digitizes the analog video output to provide digital information representative of the analog signal, a plurality of frame processors which carry out arithmetic and logical operations on the digital image information and are operable at the frame rate of the television camera coupled to the output of the digitizer, a 2-D filter operable at the frame rate of the television camera coupled to said frame processors, a converter and interface to convert digital image information processed in the frame processors and 2-D filter back into an analog signal and television display coupled to the output of the converter for displaying the processed signal.

4. 4,570,217, Feb. 11, 1986, Man machine interface; Bruce S. Allen, et al., 364*188, 191, 900

US PAT NO: 4,570,217 L9: 4 of 21

ABSTRACT:
A man-machine interface for use with industrial processes is disclosed having the capability of design and configuration of the interrelationship of components forming an overall industrial process. The man-machine interface further provides operator use, including process monitoring and control, as well as alarm annunciation. Most user interaction with the man-machine interface is performed through a color CRT monitor having a touch panel on the surface of the CRT screen. Operator use may be limited to touch panel interaction while configurer and designer use normally further includes use of a keyboard.
The man-machine interface utilizes distributed processing and incorporates a high level graphic language. The graphic language facilitates real time graphic display implementation through use of dynamic and static variables.

US PAT NO: 4,570,217 L9: 4 of 21
Variable types are dynamically associated with variable values so that variables can undergo type changes without detrimental effect. Video bit bangers and shifters further enhance the versatility and ease of implementing rapid modifications of graphic displays. The man-machine interface further incorporates a new bus structure including a new bus arbitration technique, a unidirectional memory boundary protection mechanism, an improved interrupt system, and an improved watchdog timer circuit.

5. 4,562,304, Dec. 31, 1985, Apparatus and method for emulating computer keyboard input with a handprint terminal; Jean R. Ward, et al., 178*18; 382*13

US PAT NO: 4,562,304 L9: 5 of 21

ABSTRACT:
An apparatus and method are disclosed for emulating computer keyboard input

US PAT NO: 4,562,304 L9: 5 of 21
from a handprint terminal, the output of the handprint terminal comprising character data along with row and column position data for each character. A line buffer memory temporarily holds characters from the same row. While the characters belonging to any given row are stored in the line buffer memory, local editing may be performed to delete and/or add and/or change characters, with function signals being outputted from the apparatus by the control unit

a character received is in a different row from the character preceeding it, the line buffer memory is cleared of all previous characters that had been loaded into it and carriage return or carriage-up signals are outputted from the control unit corresponding to the row change. The character is then loaded into the line buffer memory to start a new row.

6. 4,551,810, Nov. 5, 1985, Method and apparatus for designing duct work and for producing patterns for conduit sections in the designed duct work; Richard W. Levine, 364*475, 191, 512

US PAT NO: 4,551,810 L9: 6 of 21

ABSTRACT:
A method and apparatus for partially automatically designing a conduit network and automatically producing patterns for cutting out the sides of conduit sections from laminar material. The CAD-CAM system eliminates the detailing of fittings and other components of a heating and ventilating system, pattern type and dimensional data being fed directly, i.e., without human intervention, from a memory in a CAD system to a CAM pattern generating and fabricating system. The patterns for the closed sides of the conduit network are developed from mathematical relationships specifying the geometry of basic pattern types. The patterns so developed are computed for optimum positioning with other developed patterns, most preferably with alignment of similarly shaped edges for sheet material optimization, and preferably with adjacent grouping of the patterns for each end product to facilitate location and assembly and, most preferably, in such a manner that each grouping can be

US PAT NO: 4,551,810 L9: 6 of 21
severed from the sheet material with a single cut to facilitate use of sheet or coil stock shearing machinery.

7. 4,531,189, Jul. 23, 1985, Data conversion, communication and analysis system; John E. Mosier, et al., 364*550; 358*282; 364*422, 551; 382*56

US PAT NO: 4,531,189 L9: 7 of 21

ABSTRACT:
A local station and a central computer subsystem remotely located from each other are interconnected by a transmission system, such as a telephone network, so that a medium containing visual data can be read in the vicinity where the cart is made, but automatically analyzed by a computer at the central computer subsystem. The local station includes an optical reader device for reading the medium and converting the visual data contained thereon into numerical data in the form of binary electrical signals. The

US PAT NO: 4,531,189 L9: 7 of 21
binary electrical signals are compressed by a hardware compressor circuit and a software compressor program so that the transmission time for transmitting the data to the central computer subsystem is reduced. Once the data is transmitted to the central computer subsystem, an analysis of the data is made after any desired modifications of the data have been made through a graphics terminal.

8. 4,496,944, Jan. 29, 1985, Graphics display system and method including associative addressing; Arthur J. Collmeyer, et al., 340*723, 727, 747, 750; 365*49

US PAT NO: 4,496,944 L9: 8 of 21

ABSTRACT:
A graphics display system is disclosed including a memory circuit for storing

US PAT NO: 4,496,944 L9: 8 of 21

rasterizing the vector data into a second memory for storage, and a processor for controlling the operation of the vector memory and raster memory circuits. The raster data can be displayed on a suitable cathode ray tube monitor, thereby displaying the graphics image on the monitor.

9. 4,495,582, Jan. 22, 1985, Control system for pre-setting and operation of a printing press and collator; Robert A. Dessert, et al., 364*469; 101*248; 364*518

US PAT NO: 4,495,582 L9: 9 of 21

ABSTRACT:
Process and apparatus for manufacturing multi-part forms uses web presses having printing stations and processing stations at which operations are performed on webs in registry with a series of printed images, and uses a collator to assemble related webs from said presses, and to perform

US PAT NO: 4,495,582 L9: 9 of 21

additional operations on assembled webs in registry with images thereon. A digital job description of a form is created, including location of printed images on several parts of the form and location of process items, e.g. perforations, holes, or cuts on parts of the form. This job description is stored in the memory of a computer [PR-2] with a job identifying code. Also, a digital description is created of images to be printed on the form, and stored in memory with the job identifying number. The image descriptions are recalled from memory and used to create printing plates for the presses and to pre-set printing and processing sections of a press for each part of the form. The parts of the form are then produced on the presses and supplied to the collator. The job description is recalled from memory and used to pre-set stations of the collator to assemble and complete processing of the multi-part forms. The computer also gathers and stores management data as the presses and collator operate, keeps a record of supplies/tools needed for each job and makes this information available to operators through terminals, and maintains records of jobs entered, work in process, and jobs shipped.

US PAT NO: 4,495,582 L9: 9 of 21

10. 4,492,956, Jan. 8, 1985, Graphics display system and method including preclipping circuit; Arthur J. Collmeyer, et al., 340*723, 731, 747

US PAT NO: 4,492,956 L9: 10 of 21

ABSTRACT:
A graphics display system is disclosed including a memory circuit for storing vector data representing a graphics image, a raster memory circuit for rasterizing the vector data into a second memory for storage, and a processor for controlling the operation of the vector memory and raster memory circuits. The raster data can be displayed on a suitable cathode ray tube monitor, thereby displaying the graphics image on the monitor.

11. 4,491,836, Jan. 1, 1985, Graphics display system and method including two-dimensional cache; Arthur J. Collmeyer, et al., 340*747, 721, 732, 750

US PAT NO: 4,491,836 L9: 11 of 21

ABSTRACT:
A graphics display system is disclosed including a memory circuit for storing vector data representing a graphics image, a raster memory circuit for rasterizing the vector data into a second memory for storage, and a processor

for controlling the operation of the vector memory and raster memory circuits. The raster data can be displayed on a suitable cathode ray tube monitor, thereby displaying the graphics image on the monitor.

12. 4,437,156, Mar. 13, 1984, Programmable calculator; Chris J. Christopher, et al., 364*200

US PAT NO: 4,437,156 L9: 12 of 21

US PAT NO: 4,437,156 L9: 12 of 21

ABSTRACT:
An adaptable programmable calculator employs modular read-write and read-only memories separately expandable to provide additional program and data storage functions within the calculator oriented toward the environment of the user, and an LSI NMOS central processing unit, which includes the capability of bidirectionally transferring information between itself and various input/output units. The input/output units include a keyboard input unit having a full complement of alphanumeric keys, a magnetic tape cassette reading and recording unit capable of bidirectionally transferring programs and data between the calculator and a magnetic tape, a 32-character solid state output display unit capable of displaying every alphabetic and numeric character. The calculator employs a natural algebraic program language that allows the user to enter lines of one or more alphanumeric algebraic statements into the calculator from the keyboard input unit while visually observing each line as it is entered to check for errors therein. The user

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may immediately execute each entered line or store that line as part of a program in the read-write memory, may subsequently recall the executed or stored line so that it may be reinspected, and, if necessary, edited and re-executed or re-stored, thereby automatically replacing the previously stored line. The program language of the calculator is contained within a plug-in language read-only memory and may be changed by inserting a different language read-only memory.

13. 4,419,740, Dec. 6, 1983, Method for storing and retrieving data; Charles M. Hevenor, Jr., 364*900

US PAT NO: 4,419,740 L9: 13 of 21

ABSTRACT:
An automated artwork generation system employs a video display and a microprocessor for verifying and editing data derived from a digitizer and

US PAT NO: 4,419,740 L9: 13 of 21
utilized by a photoplotter. The system includes a data storage and retrieval apparatus in which data processed through the system is stored. The apparatus permits random access to data in a memory, and both the storing and retrieval times are minimized by establishing a direct relationship between the zone of a workpiece in which data is located and the portion of the memory in which the data is stored. Data entries in the memory are made in both a data entry file and a bulk data file. The entry file serves as an index to the bulk data file and contains abbreviated data entries and pointers identifying addresses in the bulk data file where additional related data is stored.

14. 4,352,165, Sep. 28, 1982, Apparatus for storing and retrieving data; Charles M. Hevenor, Jr., 364*900; 360*78

US PAT NO: 4,352,165 L9: 14 of 21

US PAT NO: 4,352,165 L9: 14 of 21

ABSTRACT:
An automated artwork generation system employs a video display and a microprocessor for verifying and editing data derived from a digitizer and utilized by a photoplotter. The system includes a data storage and retrieval apparatus in which data processed through the system is stored. The apparatus permits random access to data in a memory, and both the storing and retrieval times are minimized by establishing a direct relationship between the zone of a workpiece in which data is located and the portion of the memory in which the data is stored. Data entries in the memory are made in both a data entry file and a bulk data file. The entry file serves as an index to the bulk data file and contains abbreviated data entries and pointers identifying addresses in the bulk data file where additional related data is stored.

15. 4,322,816, Mar. 30, 1982, Programmable calculator having structure for controlling an x-y plotter; Richard M. Spangler, et al., 364*900, 520

US PAT NO: 4,322,816 L9: 15 of 21

ABSTRACT:
An adaptable programmable calculator is provided by employing a modular read-write and read-only memory unit capable of being expanded to provide the calculator with additional program and data storage functions oriented towards the environment of the user, a central processing unit capable of performing both serial binary and parallel binary-coded-decimal arithmetic, and an input-output control unit capable of bidirectionally transferring information between the memory or central processing units and a number of input and output units. The memory, central processor, and input-output control units are controlled by a microprocessor included in the central processing unit.
The input and output units include a keyboard input unit with a plurality of alphanumeric keys, a magnetic tape cassette reading and recording unit capable of bidirectionally transferring programs and data between a magnetic

US PAT NO: 4,322,816 L9: 15 of 21
tape and the calculator, and a solid state output display unit capable of displaying every alphabetic and numeric character and many other symbols individually or in combination. All of these input and output units are included within the calculator itself. An output printer, an X-Y plotter, a typewriter, a teletypewriter, a magnetic or paper tape reading and recording unit, an extended read-write memory unit, a magnetic disc reading and recording unit, a modem for connecting the calculator via telephone lines to a remotely located computer, and many other peripheral input and output units may also be employed with the calculator.
The calculator may be operated manually by the user from the keyboard input unit or automatically by a program stored within the memory unit to perform calculations and provide an output indication of the results thereof. It may also be employed to load programs into the memory unit from the keyboard input unit, to separately or collectively transfer data and programs bidirectionally between the memory unit and an external magnetic tape and to code programs or sections thereof stored in the memory unit as being secure

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when they are transferred to an external magnetic tape, whereby preventing users of the calculator from again transferring them to an external magnetic tape or obtaining any indication of the individual program steps once they are reloaded into the calculator. In addition, the calculator may be employed to edit programs stored in the memory unit and to print out program lists, labels, and messages.
The calculator employs an extended version of BASIC computer language and allows the user to enter a line comprising an alphanumeric statement into the calculator from the keyboard input unit while visually observing an

alphanumeric display of that line to check for errors therein, permitting the user to cause the entered lines to be immediately executed by the calculator or stored as part of a program within the memory unit and permitting the user to subsequently recall the executed or stored line so that it may be reinspected, reevaluated, and, if necessary edited and executed or re-executed, or restored in edited form. Any entered or recalled information may be edited by employing the keyboard input unit to selectively delete or

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replace incorrect or undesired portions of the information or to selectively insert corrected or previously omitted portions thereof on a line-by-line or character-by-character basis. Syntax errors are automatically detected by the calculator when the entered statement is terminated, and execution errors are automatically detected upon attempted execution of the statement or statements. Both types of errors are indicated to the user via error messages displayed by the output display unit. In the event the calculator is being used in combination with an external printer unit indications of syntax or execution errors may, if desired, be printed.

The calculator employs a compiler for converting each statement entered into the calculator in BASIC language into an internal stored format. It also employs an uncompiler for regenerating in the BASIC language statement any entered line converted to the internal stored format. The compiler and uncompiler operate on a line-by-line basis.

The magnetic tape cassette reading and recording unit employed in the calculator allows the user to chain together several program segments and

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allows program manipulation of several blocks of data on an individual basis, thereby providing more efficient utilization of the available calculator memory. An interrupt feature of the cassette unit facilitates searching for a particular file located on a magnetic tape at the same time the calculator is performing other functions.

16. 4,180,854, Dec. 25, 1979, Programmable calculator having string variable editing capability; Jack M. Walden, et al., 364*200

US PAT NO: 4,180,854 L9: 16 of 21

ABSTRACT:

A programmable calculator employs modular read-write and read-only memories separately expandable to provide additional program and data storage functions within the calculator oriented toward the environment of the user and two sixteen bit LSI NMOS central processing units. One of the central

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processing units (LPU) is employed to perform language syntaxing, arithmetic, and general supervision of program execution. The second central processing unit (PPU) is employed for managing input/output operations. Communication between the two central processing units is accomplished by an arrangement through which the two central processing units share a common portion of memory. The calculator also includes a keyboard having a full complement of alphanumeric keys for entering programs and data into the calculator and for otherwise allowing the user to control operation of the calculator. The calculator further includes a CRT that can be operated in either an alphanumeric mode or a graphics mode, two magnetic tape transports that permit the user to store information into and to retrieve information from the user portion of the calculator read-write memory, and an 80-column thermal printer utilizing a print head that includes 560 thermal print resistors arranged in a single horizntal row.

17. 4,127,897, Nov. 28, 1978, Programmable calculator having extended

input/output capability; Richard M. Spangler, et al., 364*900

US PAT NO: 4,127,897 L9: 17 of 21

ABSTRACT:
An adaptable programmable calculator is provided by employing a modular read-write and read-only memory unit capable of being expanded to provide the calculator with additional program and data storage functions oriented towards the environment of the user, a central processing unit capable of performing both serial binary and parallel binary-coded-decimal arithmetic, and an input-output control unit capable of bidirectionally transferring information between the memory or central processing units and a number of input and output units. The memory, central processor, and input-output control units are controlled by a microprocessor included in the central processing unit.
The input and output units include a keyboard input unit with a plurality of alphanumeric keys, a magnetic tape cassette reading and recording unit

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capable of bidirectionally transferring programs and data between a magnetic tape and the calculator, and a solid state output display unit capable of displaying every alphabetic and numeric character and many other symbols individually or in combination. All of these input and output units are included within the calculator itself. An output printer, and X-Y plotter, a typewriter, a teletypewriter, a magnetic or paper tape reading and recording unit, an extended read-write memory unit, a magnetic disc reading and recording unit, a modem for connecting the calculator via telephone lines to a remotely located computer, and many other peripheral input and output units may also be employed with the calculator.
The calculator may be operated manually by the user from the keyboard input unit or automatically by a program stored within the memory unit to perform calculations and provide an output indication of the results thereof. It may also be employed to load programs into the memory unit from the keyboard input unit, to separately or collectively transfer data and programs bidirectionally between the memory unit and an external magnetic tape and to

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code programs or sections thereof stored in the memory unit as being secure when they are transferred to an external magnetic tape, thereby preventing users of the calculator from again transferring them to an external magnetic tape or obtaining any indication of the individual program steps once they are reloaded into the calculator. In addition, the calculator may be employed to edit programs stored in the memory unit and to print out program lists, labels, and messages.
The calculator employs an extended version of BASIC computer language and allows the user to enter a line comprising an alphanumeric statement into the calculator from the keyboard input unit while visually observing an alphanumeric display of that line to check for errors therein, permitting the user to cause the entered lines to be immediately executed by the calculator or stored as part of a program within the memory unit, and permitting the user to subsequently recall the executed or stored line so that it may be reinspected, reevaluated, and, if necessary, edited and executed or re-executed, or restored in edited form. Any entered or recalled information

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may be edited by employing the keyboard input unit to selectively delete or replace incorrect or undesired portions of the information or to selectively insert corrected or previously omitted portions thereof on a line-by-line or character-by-character basis. Syntax errors are automatically detected by the calculator when the entered statement is terminated, and execution errors are automatically detected upon attempted execution of the statement or statements. Both types of errors are indicated to the user via error messages displayed by the output display unit. In the event the calculator is being

used in combination with an external printer unit indications of syntax or execution errors may, if desired, be printed.
The calculator employs a compiler for converting each statement entered into the calculator in BASIC language into an internal stored format. It also employs an uncompiler for regenerating in the BASIC language statement any entered line converted to the internal stored format. The compiler and uncompiler operate on a line-by-line basis.
The magnetic tape cassette reading and recording unit employed in the

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calculator allows the user to chain together several program segments and allows program manipulation of several blocks of data on an individual basis, thereby providing more efficient utilization of the available calculator memory. An interrupt feature of the cassette unit facilitates searching for a particular file located on a magnetic tape at the same time the calculator is performing other functions.

18. 4,126,898, Nov. 21, 1978, Programmable calculator including terminal control means; Richard M. Spangler, et al., 364*900, 706, 709, 715; D18*7

US PAT NO: 4,126,898 L9: 18 of 21

ABSTRACT:
An adaptable programmable calculator is provided by employing a modular read-write and read-only memory unit capable of being expanded to provide the calculator with additional program and data storage functions oriented

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towards the environment of the user, a central processing unit capable of performing both serial binary and parallel binary-coded-decimal arithmetic, and an input-output control unit capable of bidirectionally transferring information between the memory or central processing units and a number of input and output units. The memory, central processor, and input-output control units are controlled by a microprocessor included in the central processing unit.
The input and output units include a keyboard input unit with a plurality of alphanumeric keys, a magnetic tape cassette reading and recording unit capable of bidirectionally transferring programs and data between a magnetic tape and the calculator and, a solid state output display unit capable of displaying every alphabetic and numeric character and many other symbols individually or in combination. All of these input and output units are included within the calculator itself. An output printer, an X-Y plotter, a typewriter, a teletypewriter, a magnetic or paper tape reading and recording unit, an extended read-write memory unit, a magnetic disc reading and

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recording unit, a modem for connecting the calculator via telephone lines to a remotely located computer, and many other peripheral input and output units may also be employed with the calculator.
The calculator may be operated manually by the user from the keyboard input unit or automatically by a program stored within the memory unit to perform calculations and provide an output indication of the results thereof. It may also be employed to load programs into the memory unit from the keyboard input unit, to separately or collectively transfer data and programs bidirectionally between the memory unit and an external magnetic tape and to code programs or sections thereof stored in the memory unit as being secure when they are transferred to an external magnetic tape, thereby preventing users of the calculator from again transferring them to an external magnetic tape or obtaining any indication of the individual program steps once they are reloaded into the calculator. In addition, the calculator may be employed to edit programs stored in the memory unit and to print out program lists, labels, and messages.

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The calculator employs an extended version of BASIC computer language and allows the user to enter a line comprising an alphanumeric statement into the calculator from the keyboard input unit while visually observing an alphanumeric display of that line to check for errors therein, permitting the user to cause the entered lines to be immediately executed by the calculator or stored as part of a program within the memory unit, and permitting the user to subsequently recall the executed or stored line so that it may be reinspected, reevaluated, and, if necessary, edited and executed and re-executed, or restored in edited form. Any entered or recalled information may be edited by employing the keyboard input unit to selectively delete or replace incorrect or undesired portions of the information or to selectively insert corrected or previously omitted portions thereof on a line-by-line or character-by-character basis. Syntax errors are automatically detected by the calculator when the entered statement is terminated, and execution errors are automatically detected upon attempted execution of the statement or statements. Both types of errors are indicated to the user via error messages

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displayed by the output display unit. In the event the calculator is being used in combination with an external printer unit indications of syntax or execution errors may, if desired, be printed.
The calculator employs a compiler for converting each statement entered into the calculator in BASIC language into an internal stored format. It also employs an uncompiler for regenerating in the BASIC language statement any entered line converted to the internal stored format. The compiler and uncompiler operate on a line-by-line basis.
The magnetic tape cassette reading and recording unit employed in the calculator allows the user to chain together several program segments and allows program manipulation of several blocks of data on an individual basis, thereby providing more efficient utilization of the available calculator memory. An interrupt feature of the cassette unit facilitates searching for a particular file located on a magnetic tape at the same time the calculator is performing other functions.

19. 4,Ø75,679, Feb. 21, 1978, Programmable calculator; Chris J. Christopher, et al., 364*9ØØ; 34Ø*365R; 364*7Ø6

US PAT NO: 4,Ø75,679 L9: 19 of 21

ABSTRACT:
An adaptable programmable calculator employs modular read-write and read-only memories separately expandable to provide additional program and data storage functions within the calculator oriented toward the environment of the user, and an LSI NMOS central processing unit, capable of handling sixteen-bit parallel binary operations, binary-coded-decimal arithmetic, sixteen-bit parallel input/output operations, two-level interrupt from up to sixteen input/output devices, and a direct memory access channel. The input/output units include a keyboard input unit having a full complement of alphanumeric keys, a magnetic tape cassette reading and recording unit capable of bidirectionally transferring programs and data between the calculator and a magnetic tape, a 32-character solid state output display unit capable of

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displaying every alphabetic and numeric character and many other symbols individually or in combination, and a sixteen-column alphanumeric thermal printer for printing results of computations, program listings, messages generated by the user and the calculator itself, and error conditions encountered during use of the calculator. All of these input/output units are included within the calculator itself. Many other external input/output units may be employed with the calculator. The calculator may be operated manually by the user from the keyboard input unit or automatically through a program

output indication of the results thereof. While a program stored within the read-write memory is being executed, the user can perform calculations manually from the keyboard. Execution of the program is temporarily suspended at convenient points within the program to allow execution of the calculations manually selected by the user. If desired, the user may be prevented from manually selecting calculations from the keyboard input unit by disabling the keyboard input unit during program execution. The calculator

US PAT NO: 4,075,679 L9: 19 of 21

employs a natural algebraic program language that allows the user to enter lines of one or more alphanumeric algebraic statements into the calculator from the keyboard input unit while visually observing each line as it is entered to check for errors therein. The user may immediately execute each entered line or store that line as part of a program in the read-write memory, may subsequently recall the executed or stored line so that it may be reinspected, and, if necessary, edited and re-executed or re-stored, thereby automatically replacing the previously stored line. The program language of the calculator is contained within a plug-in language read-only memory and may be changed by inserting a different language read-only memory.

20. 4,058,849, Nov. 15, 1977, System for converting a rough sketch to a finished drawing; William Joseph Fitzgerald, et al., 364*520; 340*365R, 365VL; 364*300, 900

US PAT NO: 4,058,849 L9: 20 of 21

ABSTRACT:
By means of a suitable data entry device such as an electronic digitizing tablet or graph board, items of data respectively defining the original configuration of a roughly sketched object and the desired final proportions thereof are entered into a stored table called a "pointing sequence list" (PSL), which is capable of storing all of the information required to define both the original form and the desired final configuration of the object. Initially the PSL contains positional entries representing the coordinates of definitive points on the roughly sketched object and dimensional entries specifying the proportions which the object is to have in its final delineation, all arranged in an order corresponding to a predefined pointing sequence which is followed by the operator when he enters the necessary items of graphic information into the system. The initial PSL subsequently is converted to a new PSL by a rectifying procedure which modifies the coordinates of the previously entered points where necessary in order to

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effect horizontal and vertical alinements of points which are supposed to be located on common axially directed lines. Whenever a coordinate is modified to effect an axial alinement (or in some instances a joinder) between two or more points during the rectification process, the respective entry which corresponds to the modified coordinate in the new PSL is provided with a "pointer" to the PSL location storing the entry which specifies the referenced coordinate, thereby establishing an equivalence between these two entries. The linkages among equivalent entries are preserved during subsequent processing operations performed upon these entries, so that a change in one member of each set affects all of the other members thereof. The new PSL entries are then further modified where necessary in accordance with the proportions specified by the various dimensional entries, so that the PSL ultimately specifies the positions of points defining a rectified and proportioned version of the original rough sketch, thereby enabling a finished drawing or other final representation of the object to be produced from these PSL entries.

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21. 4,012,725, Mar. 15, 1977, Programmable calculator; Richard M. Spangler, et al., 364*200, 706

ABSTRACT:
An adaptable programmable calculator is provided by employing a modular read-write and read-only memory unit capable of being expanded to provide the calculator with additional program and data storage functions oriented towards the environment of the user, a central processing unit capable of performing both serial binary and parallel binary-coded-decimal arithmetic, and an input-output control unit capable of bidirectionally transferring information between the memory or central processing units and a number of input and output units. The memory, central processor, and input-output control units are controlled by a microprocessor included in the central

processing unit.
The input and output units include a keyboard input unit with a plurality of alphanumeric keys, a magnetic tape cassette reading and recording unit capable of bidirectionally transferring programs and data between a magnetic tape and the calculator and, a solid state output display unit capable of displaying every alphabetic and numeric character and many other symbols individually or in combination. All of these input and output units are included within the calculator itself. An output printer, an X-Y plotter, a typewriter, a teletypewriter, a magnetic or paper tape reading and recording unit, an extended read-write memory unit, a magnetic disc reading and recording unit, a modem for connecting the calculator via telephone lines to a remotely located computer, and many other peripheral input and output units may also be employed with the calculator.
The calculator may be operated manually by the user from the keyboard input unit or automatically by a program stored within the memory unit to perform calculations and provide an output indication of the results thereof. It may

also be employed to load programs into the memory unit from the keyboard input unit, to separately or collectively transfer data and programs bidirectionally between the memory unit and an external magnetic tape and to code programs or sections thereof stored in the memory unit as being secure when they are transferred to an external magnetic tape, thereby preventing users of the calculator from again transferring them to an external magnetic tape or obtaining any indication of the individual program steps once they are reloaded into the calculator. In addition, the calculator may be employed to edit programs stored in the memory unit and to print out program lists, labels, and messages.
The calculator employs an extended version of BASIC computer language and allows the user to enter a line comprising an alphanumeric statement into the calculator from the keyboard input unit while visually observing an alphanumeric display of that line to check for errors therein, permitting the user to cause the entered lines to be immediately executed by the calculator or stored as part of a program within the memory unit, and permitting the

user to subsequently recall the executed or stored line so that it may be reinspected, reevaluated, and, if necessary, edited and executed or re-executed, or restored in edited form. Any entered or recalled information may be edited by employing the keyboard input unit to selectively delete or replace incorrect or undesired portions of the information or to selectively insert corrected or previously omitted portions thereof on a line-by-line or character-by-character basis. Syntax errors are automatically detected by the calculator when the entered statement is terminated, and execution errors are automatically detected upon attempted execution of the statement or statements. Both types of errors are indicated to the user via error messages displayed by the output display unit. In the event the calculator is being used in combination with an external printer, unit indications of syntax or execution errors may, if desired, be printed.

The calculator employs a compiler for converting each statement entered into the calculator in BASIC language into an internal stored format. It also employs an uncompiler for generating in the BASIC language statement any

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entered line converted to the internal stored format. The compiler and uncompiler operate on a line-by-line basis.
The magnetic tape cassette reading and recording unit employed in the calculator allows the user to chain together several program segments and allows program manipulation of several blocks of data on an individual basis, thereby providing more efficient utilization of the available calculator memory. An interrupt feature of the cassette unit facilitates searching for a particular file located on a magnetic tape at the same time the calculator is performing other functions.

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(FILE USPAT)

L1Ø	78617	S	TOOL# OR TOOLBOX##
L11	128	S	L2 AND L1Ø
L12	218	S	L3 AND L1Ø
L13	1Ø2348	S	CHARACTER#
L14	71	S	L12 AND L13
L15	5Ø549	S	WINDOW#
L16	9	S	L14 AND L15

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1. 4,724,521, Feb. 9, 1988, Method for operating a local terminal to execute a downloaded application program; James M. Carron, et al., 364*3ØØ, 2ØØ [IMAGE AVAILABLE]

US PAT NO: 4,724,521 [IMAGE AVAILABLE] L16: 1 of 9

ABSTRACT:
The present invention provides methods for operating a local terminal which includes a programmable computer so that the terminal executes a pre-arranged application program. More specifically, the present invention provides methods for operating a local terminal according to a pre-arranged application program which is created on a remote computer, then communicated by a communication channel to the local terminal where it is stored for execution.

2. 4,688,195, Aug. 18, 1987, Natural-language interface generating system; Craig W. Thompson, et al., 364*3ØØ

US PAT NO: 4,688,195 L16: 2 of 9

US PAT NO: 4,688,195 L16: 2 of 9

ABSTRACT:
A system for interactively generating a natural-language input interface, without any computer-skill programming work being required. The natural-language menu interface thus generated provides a menu-selection technique whereby a totally unskilled computer user, who need not even be able to type, can access a relational or hierarchical database, without any possibility of error. That is, the user addresses commands to the database

system simply by selecting words from an appropriate menu of words which could legally follow in commands, so that the user inputs commands which are phrased entirely in English, and these commands cannot be misunderstood by the database system. The present invention provides an automatic interactive system whereby such an interface is constructed. The database is itself loaded in, and the interactive interface-construction system then addresses a series of queries to the user's technical expert, in response to which the user must classify, which tables in the database are to be used, which

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attributes of particular tables in the database are key attributes, and, in particular, what the various connections between tables in the database are and what natural-language connecting phrases will describe those relations.

3. 4,648,Ø44, Mar. 3, 1987, Basic expert system tool; Steven Hardy, et al., 364*513, 3ØØ, 9ØØ

US PAT NO: 4,648,Ø44 L16: 3 of 9

ABSTRACT:
A tool for building a knowledge system and running a consultation on a computer is easily mastered by people with little computer experience yet also provides advanced capabilities for the experienced knowledge engineer. The knowledge system includes a knowledge base in an easily understood English-like language expressing facts, rules, and meta-facts for specifying how the rules are to be applied to solve a specific problem. The tool

US PAT NO: 4,648,Ø44 L16: 3 of 9

includes interactive knowledge base debugging, question generation, legal response checking, explanation, certainty factors, and the use of variables. The knowledge base language permits recursion and is extensible. Preferably, control during a consultation is goal directed in depth-first fashion as specified by rule order. The tool is easily embodied in assembly language, or in PROLOG to allow user-defined PROLOG functions.

4. 4,625,Ø81, Nov. 25, 1986, Automated telephone voice service system; Lawrence A. Lotito, et al., 379*88, 196, 211

US PAT NO: 4,625,Ø81 L16: 4 of 9

ABSTRACT:
An automated telephone voice service system includes a data store having a plurality of addressable voice storage message baskets defined therein and a control system coupled between the store and a large plurality of telephone

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lines of a telephone network. An incoming cable may address a particular message basket by entering a code through the telephone keyboard or by a predetermined association with a particular call in line. Upon identification of the message basket the caller is greeted by a client's own voice and invited to leave a voice message which will be recorded in the message basket or given other client information. Upon entry of a personal identification code a caller is granted access to user account functions which include retrieval of voice messages, forwarding of messages to other message baskets or telephone lines, and administrative functions such as the changing of greetings or account operating criteria. Editing commands may be utilized during the recording of voice messages.

5. 4,591,974, May 27, 1986, Information recording and retrieval system; Donald H. Dornbush, et al., 364*2ØØ

US PAT NO: 4,591,974 L16: 5 of 9

ABSTRACT:
A method and system for information recording and retrieval using a hand held computer and a host microcomputer is described. The computers are provided with a communications link and application programs enabling table forms for recording of data items in the hand held computer and for the transfer of the data items to the host microcomputer having programs enabling the same table forms. The application program in the host computer is of the field definition and screen format type for recording data items in table form. The hand held computer can create the screens and the field definitions as well as run the screens. The host computer can only run the screens. This format is particularly useful for recording hospital data items.

6. 4,570,217, Feb. 11, 1986, Man machine interface; Bruce S. Allen, et al., 364*188, 191, 900

US PAT NO: 4,570,217 L16: 6 of 9

ABSTRACT:
A man-machine interface for use with industrial processes is disclosed having the capability of design and configuration of the interrelationship of components forming an overall industrial process. The man-machine interface further provides operator use, including process monitoring and control, as well as alarm annunciation. Most user interaction with the man-machine interface is performed through a color CRT monitor having a touch panel on the surface of the CRT screen. Operator use may be limited to touch panel interaction while configurer and designer use normally further includes use of a keyboard.
The man-machine interface utilizes distributed processing and incorporates a high level graphic language. The graphic language facilitates real time graphic display implementation through use of dynamic and static variables. Variable types are dynamically associated with variable values so that variables can undergo type changes without detrimental effect. Video bit

US PAT NO: 4,570,217 L16: 6 of 9
bangers and shifters further enhance the versatility and ease of implementing rapid modifications of graphic displays. The man-machine interface further incorporates a new bus structure including a new bus arbitration technique, a unidirectional memory boundary protection mechanism, an improved interrupt system, and an improved watchdog timer circuit.

7. 4,377,837, Mar. 22, 1983, Circuit interrupter with overtemperature trip device; Joseph J. Matsko, et al., 361*105

US PAT NO: 4,377,837 L16: 7 of 9

ABSTRACT:
A circuit interrupter includes a circuit breaker mechanism having a trip coil energized by a current transformer to separate the contacts upon command of a microcomputer-based trip unit during overcurrent conditions. A bimetallic normally-open thermal switch is mounted on the internal conductors of the

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breaker and is connected in parallel with the trip unit to energize the trip coil when the conductors overheat. The thermal switch is also connected to the interrupt terminal of the microcomputer to cause appropriate display and alarm information upon activation of the thermal switch.

8. 4,267,458, May 12, 1981, System and method for starting, synchronizing and operating a steam turbine with digital computer control; Robert Uram, et al., 290*40R; 60*646, 657, 660; 364*492, 494; 415*1

US PAT NO: 4,267,458 L16: 8 of 9

ABSTRACT:
Steam flow and pressure conditions needed in a turbine to satisfy the speed

and load demand of an electric power generating system are controlled by a programmed digital computer system during start-up, synchronization and load operation. Manual backup control is provided for the computer control.

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Throttle valve tests are provided under digital control and transfers are made to manual backup control if predetermined task errors occur.

9. 4,210,966, Jul. 1, 1980, Selectively combining segments of at least four acoustic well logging waveforms to automatically measure an acoustic wave parameter; John D. Ingram, 367*27; 181*103; 367*31 [IMAGE AVAILABLE]

US PAT NO: 4,210,966 [IMAGE AVAILABLE] L16: 9 of 9

ABSTRACT:
At least four waveforms representative of sonic waves obtained from an acoustic investigation of a borehole with at least four sonic receivers are combined to automatically measure a parameter of a wave present in the waveforms. The waveforms are derived from sonic receivers which are selectively spaced from each other as well as the sonic transmitter whose sonic pulses caused the sonic waves. Several techniques are described to

US PAT NO: 4,210,966 [IMAGE AVAILABLE] L16: 9 of 9
measure acoustic wave parameters such as the interval travel time of compressional and shear waves for open or cased boreholes. In accordance with one technique a multiple fold correlation process and apparatus are described to measure the acoustic wave parameter.

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